

CLAIMS

1. A heat storage device comprising:

5 a heat storage tank charged with a heat storage material for storing the heat supplied from the outside;

10 heat exchange means for executing an injection and an extraction of heat between the inside of the heat storage tank and the outside by the heat exchange between said heat storage material and a heat transfer medium;

15 said heat exchange means being disposed so as to execute a heat exchange between the central portion in said heat storage tank and the outside; and

suppressing means for suppressing the natural convection of the heat storage material, said suppressing means being disposed in the outer portion in the heat storage tank.

20 2. A heat storage device comprising:

a heat storage tank charged with a heat storage material for storing the heat supplied from the outside;

25 heat exchange means for executing an injection and an extraction of heat between the inside of the heat

storage tank and the outside by the heat exchange between said heat storage material and a heat transfer medium;

said heat exchange means being disposed so that the central portion and the outer portion in said heat storage tank are caused to sequentially perform a heat exchange with the outside; and

suppressing means for suppressing the natural convection of the heat storage material, said suppressing means being disposed in the outer portion in the heat storage tank.

3. A heat storage device comprising:

a heat storage tank charged with a heat storage material for storing the heat supplied from the outside;

heat exchange means for executing an injection and an extraction of heat between the inside of the heat storage tank and the outside by the heat exchange between said heat storage material and a heat transfer medium;

said heat exchange means being disposed so that the central portion and the outer portion in said heat storage tank are caused to individually perform a heat exchange with the outside; and

suppressing means for suppressing the natural convection of the heat storage material, said suppressing means being disposed in the outer portion in the heat storage tank.

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4. A heat storage device comprising:

a heat storage tank charged with a heat transfer medium which also serves as a heat storage material for storing the heat supplied from the outside;

heat transport means which execute an injection and an extraction of heat between the inside of the heat storage tank and the outside by the inflow and the outflow of said heat transfer medium;

said heat transport means being disposed so as to execute a heat transport between the central portion in said heat storage tank and the outside; and

suppressing means for suppressing the natural convection of the heat storage material, said suppressing means being disposed in the outer portion in the heat storage tank.

5. A heat storage device as claimed in any one of claims 1 through 4, wherein suppressing means is constituted by dispersing a liquid-absorbent material in the heat storage material or the heat transfer

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medium in the outer portion in the heat storage tank.

6. A heat storage device as claimed in any one of claims 1 through 4, wherein:

5 as suppressing means, a property of increasing viscosity by the application of voltage is provided for the heat storage material or the heat transfer medium in the outer portion in the heat storage tank; and

10 means for applying power between a pair of electrodes is further provided, as suppressing means, on opposite sides of the outer portion in the heat storage tank so as to sandwich said outer portion.

15 7. A heat storage device as claimed in any one of claims 1 through 4, wherein:

as suppressing means, a property of increasing viscosity by the application of a magnetic force is provided for the heat storage material or the heat transfer medium in the outer portion in the heat storage tank; and

20 a magnet for exerting the magnetic force is further provided, as suppressing means, in the outer portion in the heat storage tank.

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8. A heat storage device as claimed in any one of claims 1 through 4, further comprising:

a barrier, as suppressing means, for hindering the natural convection of the heat storage material or the heat transfer medium, said barrier being disposed in the outer portion in the heat storage tank.

9. A heat storage device as claimed in any one of claims 1 through 4, further comprising:

means for promoting a heat transfer, said means being disposed between the central portion and the outer portion in the heat storage tank.